

What is claimed is:

1. A method of reducing the viscosity of a viscosified treatment fluid comprising contacting the viscosified treatment fluid with an acid generated from an orthoester composition that comprises an orthoester.
2. The method of claim 1 wherein the orthoester has the general formula $RC(OR')(OR'')(OR''')$, wherein R' , R'' , and R''' are not hydrogen, and R' , R'' , and R''' may or may not be the same group.
3. The method of claim 2 wherein R' , R'' , or R''' comprise a heteroatom.
4. The method of claim 3 wherein the heteroatom is nitrogen or oxygen.
5. The method of claim 1 wherein the orthoester comprises an orthoacetate, an orthoformate, or an orthopropionate.
6. The method of claim 1 wherein the orthoester comprises an orthoester of a polyfunctional alcohol.
7. The method of claim 1 wherein the orthoester comprises a poly(orthoester).
8. The method of claim 1 wherein the viscosified treatment fluid is a fracturing fluid or a gravel pack fluid.
9. The method of claim 1 wherein the viscosified treatment fluid comprises a gelling agent that comprises a hydratable polymer.
10. The method of claim 1 wherein the viscosified treatment fluid comprises a crosslinked polysaccharide.
11. The method of claim 1 wherein at least a portion of the orthoester composition is coated or impregnated onto particulates to form coated particulates or impregnated particulates.
12. The method of claim 11 wherein the particulates comprise natural sand, quartz sand, particulate garnet, glass, ground walnut hulls, polymeric pellet, bauxite, or a ceramic.
13. The method of claim 11 wherein the particulates are in a size range from about 4 to about 100 US mesh.
14. The method of claim 11 wherein the particulates are in a size range from about 10 to about 70 US mesh.
15. The method of claim 11 wherein the orthoester is coated onto the particulates using an on-the-fly method.

16. The method of claim 11 wherein the orthoester is coated onto the particulates in a batch process.
17. The method of claim 1 wherein the orthoester composition comprises water.
18. The method of claim 17 wherein the water is present in an amount from about 2 moles of water for about every 1 mole of orthoester to an excess of water.
19. The method of claim 1 wherein the orthoester composition or the viscosified treatment fluid comprises an inhibitor.
20. The method of claim 1 wherein the orthoester composition is in a solution form, a gel form, or an emulsion form.
21. The method of claim 1 wherein the viscosity of the viscosified treatment fluid is reduced after a desired delay period.

22. A method of reducing the pH of a viscosified treatment fluid comprising:
providing an orthoester composition that comprises an orthoester;
contacting the viscosified treatment fluid with the orthoester composition;
allowing the orthoester to generate a generated acid; and
allowing the generated acid to at least partially reduce the pH of the viscosified treatment fluid.
23. The method of claim 22 wherein the orthoester has the general formula $RC(OR')(OR'')(OR''')$, wherein R' , R'' , and R''' are not hydrogen, and R' , R'' , and R''' may or may not be the same group.
24. The method of claim 23 wherein R' , R'' , or R''' comprise a heteroatom.
25. The method of claim 24 wherein the heteroatom is nitrogen or oxygen.
26. The method of claim 22 wherein the orthoester comprises an orthoacetate, an orthoformate, or an orthopropionate.
27. The method of claim 22 wherein the orthoester comprises an orthoester of a polyfunctional alcohol.
28. The method of claim 22 wherein the orthoester comprises a poly(orthoester).
29. The method of claim 1 wherein the viscosified treatment fluid is a fracturing fluid or a gravel pack fluid.
30. The method of claim 1 wherein the viscosified treatment fluid comprises a gelling agent that comprises a hydratable polymer.
31. The method of claim 1 wherein the orthoester composition comprises water.
32. The method of claim 17 wherein the water is present in an amount from about 2 moles of water for about every 1 mole of orthoester to an excess of water.

33. A method of fracturing a subterranean formation comprising:
contacting the subterranean formation with a fracturing fluid at a pressure sufficient to create or enhance at least one fracture in the subterranean formation;
contacting the fracturing fluid with an orthoester composition comprising an orthoester;
allowing the orthoester to generate a generated acid;
allowing the viscosity of the fracturing fluid to decrease; and
removing at least a portion of the fracturing fluid from the subterranean formation.
34. The method of claim 33 wherein the orthoester has the general formula $RC(OR')(OR'')(OR''')$, wherein R' , R'' , and R''' are not hydrogen, and R' , R'' , and R''' may or may not be the same group.
35. The method of claim 34 wherein R' , R'' , or R''' comprise a heteroatom.
36. The method of claim 33 wherein the orthoester comprises an orthoester of a polyfunctional alcohol.
37. The method of claim 33 wherein the orthoester composition or the fracturing fluid comprises an inhibitor that is capable of interacting with the generated acid so as to delay the reduction of the viscosity of the fracturing fluid.
38. The method of claim 37 wherein the inhibitor comprises sodium hydroxide, potassium hydroxide, an amine, sodium carbonate, or a combination thereof.
39. The method of claim 33 wherein at least a portion of the orthoester composition is coated or impregnated onto particulates to form coated particulates or impregnated particulates.
40. The method of claim 39 wherein the particulates comprise natural sand, quartz sand, particulate garnet, glass, ground walnut hulls, polymeric pellet, bauxite, or a ceramic.

41. A method of creating a gravel pack in a well bore comprising:
placing a gravel pack fluid comprising gravel particulates into a portion of the well bore so as to create a gravel pack;
contacting the gravel pack fluid with an orthoester composition comprising an orthoester;
allowing the orthoester to generate a generated acid;
allowing the viscosity of the gravel pack fluid to decrease; and
removing at least a portion of the gravel pack fluid from the subterranean formation.
42. The method of claim 41 wherein the orthoester has the general formula $RC(OR')(OR'')(OR''')$, wherein R' , R'' , and R''' are not hydrogen, and R' , R'' , and R''' may or may not be the same group.
43. The method of claim 42 wherein R' , R'' , or R''' comprise a heteroatom.
44. The method of claim 41 wherein the orthoester comprises an orthoester of a polyfunctional alcohol.
45. The method of claim 41 wherein the orthoester composition or the gravel pack fluid comprises an inhibitor that is capable of interacting with the generated acid so as to delay the reduction of the viscosity of the gravel pack fluid.
46. The method of claim 45 wherein the inhibitor comprises sodium hydroxide, potassium hydroxide, an amine, sodium carbonate, or a combination thereof.
47. The method of claim 41 wherein at least a portion of the orthoester composition is coated or impregnated onto the gravel particulates to form coated gravel particulates or impregnated gravel particulates.
48. The method of claim 47 wherein the gravel particulates comprise natural sand, quartz sand, particulate garnet, glass, ground walnut hulls, polymeric pellet, bauxite, or a ceramic.

49. A composition comprising an orthoester that will generate an acid that is capable of at least partially reducing the viscosity of a viscosified treatment fluid.

50. The composition of claim 49 wherein the orthoester has the general formula $RC(OR')(OR'')(OR''')$, wherein R' , R'' , and R''' are not hydrogen, and R' , R'' , and R''' may or may not be the same group.

51. The composition of claim 50 wherein R' , R'' , or R''' comprise a heteroatom.

52. The composition of claim 51 wherein the heteroatom is hydrogen, nitrogen, or oxygen.

53. The composition of claim 49 wherein the orthoester comprises an orthoacetate, an orthoformate, or an orthopropionate.

54. The composition of claim 49 wherein the orthoester comprises an orthoester of a polyfunctional alcohol.

55. The composition of claim 49 further comprising an inhibitor.

56. The composition of claim 55 wherein the inhibitor comprises sodium hydroxide, potassium hydroxide, an amine, sodium carbonate, or a combination thereof.

57. The composition of claim 49 wherein the viscosified treatment fluid is a fracturing fluid or a gravel pack fluid.

58. The composition of claim 49 wherein the viscosified treatment fluid comprises a gelling agent that comprises a hydratable polymer.

59. The composition of claim 49 wherein the viscosified treatment fluid comprises a crosslinked polysaccharide.

60. The composition of claim 49 wherein at least a portion of the orthoester composition is coated or impregnated onto particulates to form coated particulates or impregnated particulates.

61. The composition of claim 60 wherein the particulates comprise natural sand, quartz sand, particulate garnet, glass, ground walnut hulls, polymeric pellet, bauxite, or a ceramic.

62. The composition of claim 60 wherein the particulates are in a size range from about 4 to about 100 US mesh.

63. The composition of claim 60 wherein the particulates are in a size range from about 10 to about 70 US mesh.

64. The composition of claim 60 wherein the orthoester is coated onto the particulates using an on-the-fly method.

65. The composition of claim 60 wherein the orthoester is coated onto the particulates in a batch process.

66. The composition of claim 49 wherein the composition further comprises water.

67. The composition of claim 66 wherein the water is present in an amount from about 2 moles of water for about every 1 mole of orthoester to an excess of water.

68. The composition of claim 49 wherein composition is in a solution form, a gel form, or an emulsion form.